John Hunter's Contribution to Pathology*

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Sir James Paget in his Hunterian Oration of 1877, asserts that, "among the pathologists of his time he was by far the first." What was the state of pathology in the second part of the eighteenth century? Hieronymus D. Gaub, Boerhaave's successor in Leyden published in 1758 the first edition of *Institutiones Pathologiae Medicinalis* which for more than a generation was regarded as the most comprehensive treatise on "*Pathology,* which is the theory of the diseased state." He called pathology "whatever ought to be known with regard to the nature, causes and seats of diseases." This seems to be an adequate definition; but the book in sum and substance is a medley of the ancient Methodists' principles of the status strictus and laxus dependent on the pore size of the solid parts and humoral pathologic ideas interpreted by iatromechanical as well as iatrochemical doctrines. The absence of any sound foundation for his concept of pathology becomes evident in his paragraphs on the diseases of the solid parts of the human body where one misses any reference to morbid anatomy which by that time had already made important contributions to the comprehension of disease symptoms in terms of anatomic organ alterations. Gaub's book reflects an almost hopeless state of general pathology. While one hopefully reads the assertion in the author's preface "that everything taught in Pathology ought to be of some use in the practice of physic" one agrees, after perusal of the book, with the subsequent statement in the preface that "I am in doubt whether mankind are more benefited or hurt by the medical art." It is in comparison with this low level of general pathology that one has to appraise the contribution of John Hunter to its progress. It is true that only three years after the publication of Gaub's book Morgagni issued his immortal treatise, *On the seats and causes of diseases investigated by Anatomy.* Retrospectively, we know that this work became the foundation of the development of modern general pathology but at the time of its appearance it

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did not reveal all the opportunities which a rational correlation of bedside symptoms with autopsy observations can provide for the comprehension of the causes of disease. Morgagni limited his investigations and conclusions to the demonstration of the correspondence of morbid symptoms with organ alterations. He kept aloof from speculations as to the remote causes of disease and concerned himself only with the proximate reasons which he saw in the anatomical organ changes.

By virtue of his fundamental training and research in anatomy it is conceivable that Hunter originally adopted a similar philosophy in his investigations of human disease. This assumption is supported by the lines of Benjamin Alexander, who dedicated the third volume of his translation of Morgagni to him: "For myself I must confess, that it is to you, chiefly, I owe that little share of anatomical science, of which I am possessed. From thence arises every degree of certainty that I find in determining the seats and in great measure the causes of diseases. And though I do not affect to despise, but even greatly esteem the science of Chemistry and other branches of Natural Knowledge, auxiliary to Medicine, I cannot, however, but give the first place to Anatomy, as being the very basis, the groundwork and indeed, as I may be allowed to speak thus, the grand luminary of physik." The supposition that Hunter favored Morgagni's aim of correlating clinical symptoms with anatomic observation is further supported by Alexander's reference, "great as I have frequently known you confess him." This position as morbid anatomist is revealed by his description and discussion of two cases of cardiac anomaly, one of a long standing aortic insufficiency, the other of a ventricular septum defect. Here he explains in detail the abnormal cardiac action, evidenced by the clinical symptoms with reference to the anatomical situation. His appreciation of morbid anatomy as a key to the comprehension of clinical symptoms is frequently illustrated by the detailed clinical abstracts accompanying the pathologic specimens of his museum. Yet, he did not limit his inquiry to the seats and proximate causes of diseases but extended its scope to a search for the hidden causes and the mechanisms by which they act. The morphologic alteration of organs was for him the *product* of disease and the disclosure of the *morbid process* the aim of his investigations. He was convinced that knowledge of pathogenesis was the foundation for an understanding and ultimate alleviation of disease. But he was not satisfied with vague concepts and speculations to explain away the morbid events such as had been proposed by pathologists like Gaub. "In Natural History we are

often made acquainted with the facts, yet do not know the cause. Therefore, we are obliged to have recourse to experiments to ascertain the causes which connect the facts, one leading into the other, making a perfect whole; for without the knowledge of the causes and effects conjointly, our knowledge is imperfect." This is the rationale of Hunter, the experimental pathologist. It can be affirmed that his dynamic concept ushered in a new era of pathology. The collection of Hunterian orations bears witness to the undiminished appreciation of his contribution over a century and a half.

The preceding remarks must not be understood to imply that the basic concept of pathogenesis originated with Hunter. The question as to the origin of disease is ancient. Hippocrates and Galen found it in a faulty mixture of the humours, the Methodists in an alteration of the pore size of the solid components of the human body. With the rise of morbid anatomy alterations of organs were regarded as the proximate cause of disease; but it was obvious that the abnormality of structure demanded further explanation and both iatromechanical and iatrochemical doctrine attempted to account for it. John Hunter was the first who recognized the impasse of speculative medicine and tried to ascertain the genesis of morbid lesions by exact observation and appropriate experimentation. By placing the pathogenetic principle above mere description and classification according to topography (a capite ad calcem) Hunter advanced beyond the scope of Morgagni and gave, as Hodgson said, "to Pathology the character of rational science and a place in true Philosophy." Because of his distrust of "the prepossessions of chemical and mechanical philosophy" in the considerations of "the actions and production of actions both in vegetable and animal bodies," he based the interpretation of his biologic observations on the assumption of a specific vital force.* This concept is today no longer acceptable. But for nearly a century it dominated the theory of pathology, although the exclusive formulation of Hunter and subsequently of Bichat met increasing opposition. The advances of the basic sciences during the nineteenth century led to its gradual reversal and final defeat in our times.

Hunter did not publish in a treatise his morbid anatomic observations but his collection of and notes on pathological specimens testify to his endeavor to classify morbid lesions according to pathogenetic principles.

*For a condensed view of Hunter's idea, see James F. Palmer's footnote, Vol. III, of the works of Hunter. pages 120, ff.

His nephew and disciple, Matthew Baillie, codified the master's ideas in the first systematic textbook of morbid anatomy in 1793. *The Descriptive catalogue of the pathological specimens contained in the museum of the Royal College of Surgeons of England* was completed by E. Stanley and J. Paget in 1846 following Hunter's plan and is a brilliant outline of a general and special pathologic anatomy as it was conceived by John Hunter. Pathology of today has far advanced beyond the scope of the 18th and 19th centuries but John Hunter must always be gratefully remembered as one of its important architects.